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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/229,849	01/13/1999	MARTIN SERRANO	07470/30001	5312

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FISH & RICHARDSON, PC
12390 EL CAMINO REAL
SAN DIEGO, CA 92130-2081

EXAMINER

FLEURANTIN, JEAN B

ART UNIT PAPER NUMBER

2172

DATE MAILED: 06/03/2004

26

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/229,849

Applicant(s)

SERRANO, MARTIN

Examiner

Jean B Fleurantin

Art Unit

2172

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on RCE 01 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 4-11, 13-20, 22-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 30, 31, 34, 35, 38 and 39 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 8-11, 13, 17-20, 22, 26-29, 32, 33, 36 and 37 is/are rejected.
- 7) ☒ Claim(s) 5-7, 14-16 and 23-25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>22</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed 1st March 2004 has been entered. Claims 28-39 are added. Claims 1, 2, 4-11, 13-20, 22-39 remain pending for examination.

Examiner discusses the newly added claims 28-39 in the following rejection.

Information Disclosure Statement

2. The information disclosure statement filed March 1, 2004 (Paper No. 22) complies with MPEP § 609. It has been placed in the application file. The information disclosure statement to therein has been considered as to the merits (See attached form).

Claim Objections

3. Claim 30 is objected to because of the following informalities: “.;”. Appropriate correction is required.

Response to Applicant' Remarks

4. Applicant(s) stated on page 17, that “Claims canceled: None”. However, claims 2 (page 3), claim 12 (page 5) and claim 21 (page 7) have been indicated canceled. Appropriate correction is required.

Art Unit: 2172

Applicant's arguments, see Paper No 24, filed 1st March 2004, with respect to the rejection(s) of claim(s) 1, 2, 4-11, 13-20, 22-39 under 35 U.S. C. 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of U.S. Patent No. 6,077,313 issued to Ruf ("Ruf") and Francois Bodin et al. - A User Level Program Transformation Tool – 1998 ("Bodin").

Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim Rejections - 35 U.S.C. § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4, 8-11, 13, 17-20, 22, 26-29, 32, 33, 36 and 37 are rejected under 35 U.S. C. 103 (a) as being unpatentable over U.S. Patent No. 6,077,313 issued to Ruf ("Ruf") in view of Francois Bodin et al. - A User Level Program Transformation Tool – 1998 ("Bodin").

As per claims 1 and 10, Ruf discloses, "a method for producing a parallel computation specification based on such analysis", (see col. 2, lines 48-52);

Art Unit: 2172

(b) “constructing a serial dataflow graph from the parsed statements, the serial dataflow graph having nodes connected by directed edges, the nodes representing datasets, processing steps, and intermediate results”, (see col. 3, lines 16-22), and

c) “constructing a parallel dataflow graph from the serial dataflow graph such that the parallel dataflow graph may be executed by a parallel runtime system” as also enable the performance of dataflow analyses in parallel for more than one separate phase of such a non separable program, (see col. 2, lines 48-52). Ruf does not explicitly disclose an application program based on a script of a script-driven software tool, comprising automatically analyzing the script, and where such parallel computation specification provides functional equivalence to the script when executed by a parallel runtime system; parsing the script into statement.

However, Bodin discloses a transformation script system, (see page 180, col. 2, paragraph 5), further in see page 155, col. 1, paragraphs 1 –3, Bodin discloses a pattern that describes the code fragments to match before applying the transformation script. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combined teachings of Ruf and Bodin with an application program based on a script of a script-driven software tool, comprising automatically analyzing the script, and where such parallel computation specification provides functional equivalence to the script when executed by a parallel runtime system; parsing the script into statement. Such modification would allow the teachings of Ruf and Bodin to improve the efficiency of the parallelization applications of script-driven tools, and to provide the user with a modifiable transformation database, (see page 180 col. 2, lines paragraph 5).

As per claims 2 and 11, in addition to claim 1, Ruf does not explicitly disclose analyzing the parallel dataflow graph to generate script fragments in a form that enables the script-driven software tool to execute some of the processing steps. However, Bodin discloses a pattern that describes the code fragments to match before applying the transformation script, (see page 185, col. 1, paragraph 1). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combined teachings of Ruf and Bodin with analyzing the parallel dataflow graph to generate script fragments in a form that enables the script-driven software tool to execute some of the processing steps. Such modification allow the teachings of Ruf and Bodin to provide the user with a script which realizes automatically a code instrumentation in order to gather information about the program execution at runtime, (see page 185, col. 2, paragraph 3).

As per claims 4, 13 and 22, in addition to claim 1, Ruf further discloses, “constructing a serial dataset access table indicating datasets in the dataset table used by statements in the processing step table”, (see col. 3, lines 35-41).

As per claims 8, 17 and 26, the limitations of claims 8, 17 and 26 are rejected in the analysis of claim 1, and these claims are rejected on that basis.

As per claims 9 and 18, Ruf discloses, “wherein producing the parallel computation specification includes applying at least one pre-defined parallelization in rewrite algorithm selected from the group comprising simple partitioning, key-based partitioning, local-global

division” (see col. 2, lines 32-35), “external parallelism algorithm, and statement”, (see col. 3, lines 36-40).

As per claim 19, Ruf discloses, “a system for producing a parallel computation specification based on such analysis”, (see col. 2, lines 48-52);

(b) “means for constructing a serial dataflow graph from the parsed statements, the serial dataflow graph having nodes connected by directed edges, the nodes representing datasets, processing steps, and intermediate results”, (see col. 3, lines 16-22), and

c) “means for constructing a parallel dataflow graph from the nodes of the serial dataflow graph such that the parallel dataflow graph may be executed by a parallel runtime system” as also enable the performance of dataflow analyses in parallel for more than one separate phase of such a non separable program, (see col. 2, lines 48-52). Ruf does not explicitly disclose an application program based on a script of a script-driven software tool, comprising automatically analyzing the script, and where such parallel computation specification provides functional equivalence to the script when executed by a parallel runtime system; parsing the script into statement. However, Bodin discloses a transformation script system, (see page 180, col. 2, paragraph 5), further in page 155, col. 1, paragraphs 1-3, Bodin discloses a pattern that describes the code fragments to match before applying the transformation script. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combined teachings of Ruf and Bodin with an application program based on a script of a script-driven software tool, comprising automatically analyzing the script, and where such parallel computation specification provides functional equivalence to the script when executed

Art Unit: 2172

by a parallel runtime system; parsing the script into statement. Such modification would allow the teachings of Ruf and Bodin to improve the efficiency of the parallelization applications of script-driven tools, and to provide the user with a modifiable transformation database, (see page 180 col. 2, lines paragraph 5).

As per claim 20, in addition to claim 1, Ruf does not explicitly disclose means for analyzing the parallel dataflow graph to generate script fragments in a form that enables the script-driven software tool to execute some of the processing steps. However, Bodin discloses a pattern that describes the code fragments to match before applying the transformation script, (see page 185, col. 1, paragraph 1). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combined teachings of Ruf and Bodin with means for analyzing the parallel dataflow graph to generate script fragments in a form that enables the script-driven software tool to execute some of the processing steps. Such modification allow the teachings of Ruf and Bodin to provide the user with a script which realizes automatically a code instrumentation in order to gather information about the program execution at runtime, (see page 185, col. 2, paragraph 3).

As per claim 27, Ruf discloses, “wherein the means for producing the parallel computation specification includes applying at least one pre-defined parallelization in rewrite algorithm selected from the group comprising simple partitioning, key-based partitioning, local-global division” (see col. 2, lines 32-35), “external parallelism algorithm, and statement”, (see col. 3, lines 36-40).

As per claims 28, 29, 32, 33, 36 and 37, in addition to claim 1, Ruf further discloses, “constructing a parallel dataflow graph from the serial dataflow graph” as enable the performance of dataflow analyses in parallel for more than one separate phase of such a non separable program, (see col. 2, lines 48-52). Ruf does not explicitly disclose constructing a serial dataset access table indicating datasets in the dataset table used by statements in the processing step table. However, Bodin discloses transformation script, in particular for building patterns and set of functions, that allows to generalize automatically a pattern, (see page 181, col. 1, paragraph 5). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combined teachings of Ruf and Bodin with constructing a serial dataset access table indicating datasets in the dataset table used by statements in the processing step table. Such modification allow the teachings of Ruf and Bodin to provide the user with a script which realizes automatically a code instrumentation in other to gather information about the program execution at runtime, (see page 185, col. 2, paragraph 3).

Allowable Subject Matter

6. Claims 5-7, 14-16 and 23-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. Claims 30, 31, 34, 35, 38 and 39 are allowed over the prior art of record.

The following is a statement of reasons for the indication of allowable subject matter:

As per claims 30, 31, 34, 35, 38 and 39, the prior art of record fails to teach or suggest the claimed features “a method for parallelizing a computer application program based on a script of a script-driven software tool, comprising automatically analyzing the script and producing a parallel computation specification based on such analysis, where such parallel computation specification provides functional equivalence to the script when executed by a parallel runtime system, by (iii) constructing a dataset access table based on the serial dataset access table; and (iv) determining, for each processing step identified in the parallel processing step table, if a corresponding pre-defined parallelization rewrite rule exists for such processing step, and if so, then applying the corresponding pre-defined parallelization rewrite rule to redefine associated entries in the parallel dataset table, the parallel processing step table, and the dataset access table as parallel processing entries; and if not, then defining such associated entries as serial processing entries; and (c) constructing a parallel dataflow graph from the serial dataflow graph” in conjunction with other elements of the independent claims would not found anticipated or obvious over the prior art made of record. Therefore, claims 30, 31, 34, 35, 38 and 39 are hereby allowed

Prior Art

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 5,870,743 issued to Cohen et al.

U.S. Patent No. 5,956,704 issued to Gautam et al.

U.S. Patent No. 6,253,371 issued to Iwasawa et al.

Art Unit: 2172

CONTACT INFORMATION


9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B Fleurantin whose telephone number is 703-308-6718. The examiner can normally be reached on 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John B Breene can be reached on 703-305-9790. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jean Bolte Fleurantin

May 28, 2004


SHAHID ALAM
PRIMARY EXAMINER